IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	Date: June 5, 2009
CHU et al.	:	Group Art Unit: 1793
Serial No. 10/564,842	:	Examiner: Michael A. Marcheschi
Filed: January 11, 2006	:	Docket No.: W9643-02

For: Abrasive Particles for Chemical Mechanical Polishing

DECLARATION UNDER 37 CFR 1.132

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, James Neil Pryor, declare and state as follows:

1. I am a citizen of the United States of America and presently reside at 3253 Danmark Drive, West Friendship, Maryland, 21794.

2. I received both my undergraduate and graduate education at The University of Delaware.

3. I have been employed by W. R. Grace & Co.-Conn. from 1976 to the present and currently hold the title of Research Fellow. A substantial portion of my research and development activities has been directed to the synthesis and characterization of colloidal particles.

4. I am one of the named applicants of the above-identified patent application and am fully aware of the technology to which it is directed.

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

Pursuant to 37 CFR §1.8, I hereby certify that I have a reasonable basis to expect that this correspondence will be deposited with the United States Postal Service on or before the date indicated, as First Class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA, 22313-1450.

6-5-09 Kim Sautel-Bray
Date Signature

5. I have read and understand the contents of the Official Action issued September 8, 2008 with respect to the Application for U.S. Letters Patent having Serial No. 10/564,842 filed January 11, 2006.

6. I have read and understand the content of each of the following references, which have been used as the basis for rejections in the above-identified Official Action:

- WO 01/98201 (Fang et. al.) and
- U.S. Patent 6,527,817 (Fang et al.)

7. The span value, as defined in the subject application and recited in the present claims, is a measure of the breadth of the particle size distribution. The span value is measured by subtracting the d_{10} particle size (i.e., the size below which are 10% by volume of the particles) from the d_{90} particle size (i.e., the size below which are 90% by volume of the particles) generated using transmission electron photomicrographs. This provides an abrasive particle formulation with a high removal rate, as is shown in Table 1 of the present application.

8. The particle size distribution for a given population of particles may be defined in two ways, by number or by volume. A cumulative particle size distribution, by number, reflects the number of particles below a given particle size (diameter) as a fraction of the total number of particles in the population. Conversely, a cumulative particle size distribution, by volume, reflects the volume of particles below a given particle size (diameter) as a fraction of the total volume of particles in the population. A particle size distribution, by number, may vary considerably from a particle size distribution by volume for the same population depending primarily on the breadth of the distribution. For example, in the attached Figures 1a and 2a, cumulative particle size distribution, by number, is represented by the blue line and cumulative particle size distribution, by volume, is represented by the red line. The blue line (number distribution) and the red line (volume distribution) represent the same particle distribution. Thus, each method of characterizing the same particle distribution may vary depending on whether volume or number distribution is utilized.

9. It is my considered opinion, based on the above showing and my knowledge of the related known art, that the particles set forth in the Fang et al. references may not necessarily and inherently provide a particle size distribution having a span value, by volume, as recited in the present claims. For example, Fang et al. describes on page 3, line 34 to page 4, line 9 that the particles described therein may possess a σ_g ($\sigma_g=d_{84}/d_{16}$ where d_{84} is the particle size below which

are 84% of the particles by number and d_{16} is the particle size below which are 16% of the particles by number) value of at least about 1.1, and preferably 1.8 – 2.3. Fang et al. also mentions that the particles may become more polydispersed as the σ_g value increases above 1. However, a large σ_g value for a particle size distribution, by number, does not necessarily result in a large span value for a particle size, distribution by volume (see Fig 1b). Moreover, a lower σ_g for a particle size distribution, by number, may result in a large span value for a particle size distribution, by volume (see Figure 2b). Thus, the σ_g values, by number, of the particle size distributions set forth in the Fang et al. references, would not necessarily possess the span values, by volume, of the particle size distributions recited in the claims of the instant application. Accordingly, the presently claimed polishing formulation is distinct from the polishing formulation disclosed or suggested by the Fang et al. references.

Further, it would not have been obvious for the artisan, after reading the teachings of the Fang et al. patent, to select an abrasive particle that possesses a large span value since this is not even mentioned or considered desirable in the Fang et al. references.

10. The undersigned declares further that all statements made herein of my own knowledge and belief are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

James Neil Pryor

June 5, 2009

Date

Fig 1a: **Cumulative distributions showing calculation of σ_g and span**

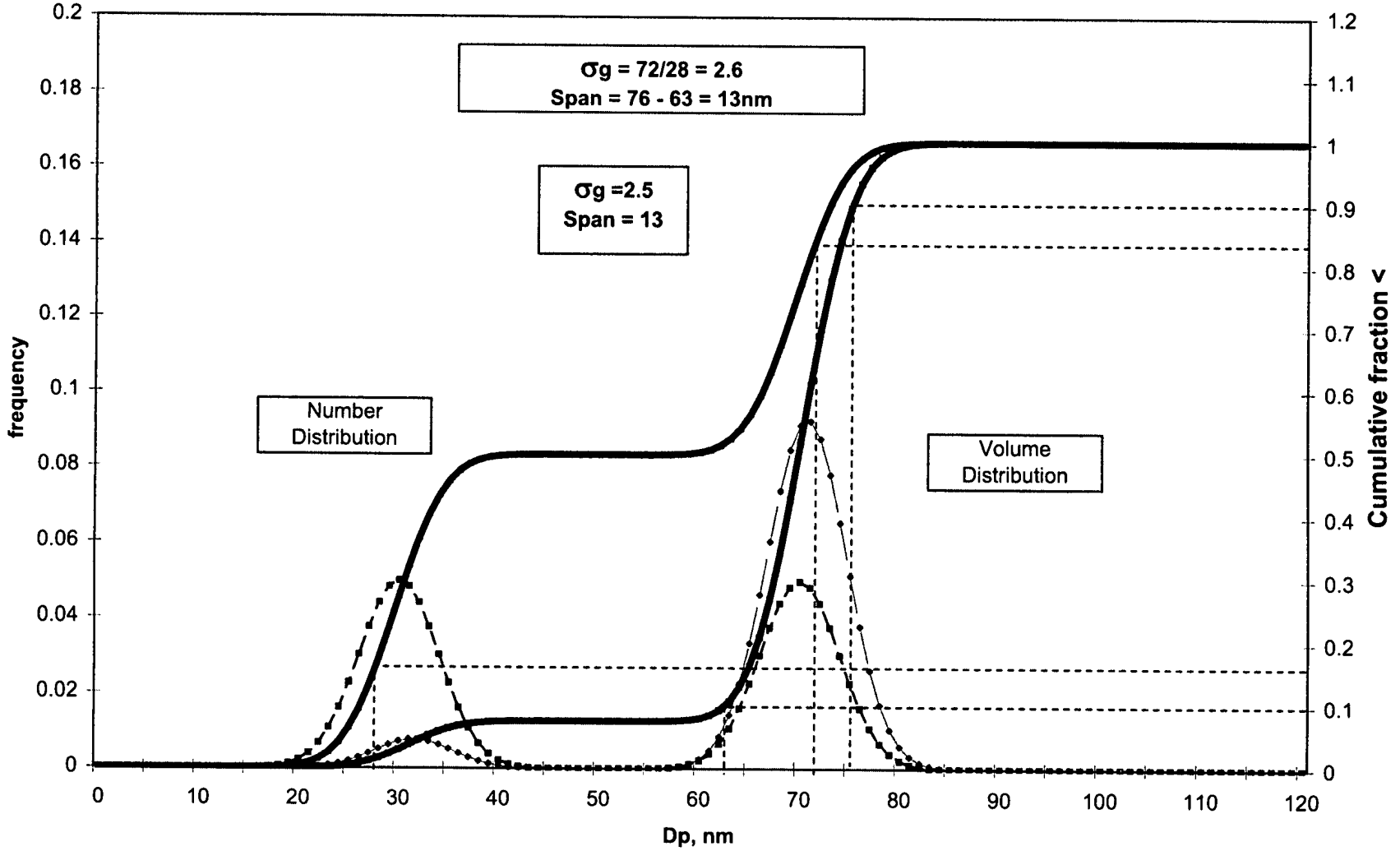

Fig 2a: **Cumulative distributions showing calculation of σ_g and span**

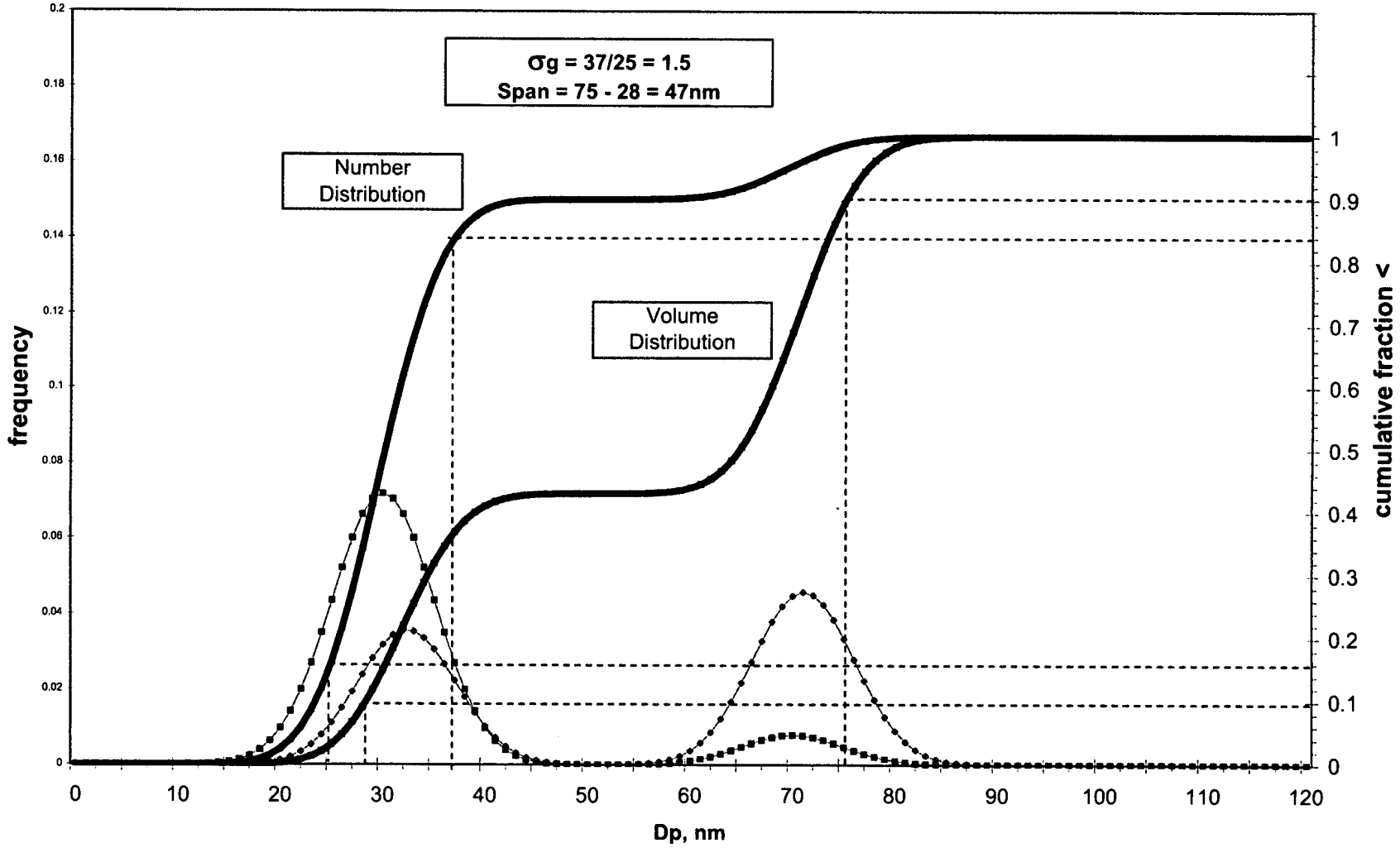

Fig 1b: **Example of a distribution of particles having large s_g but small span**

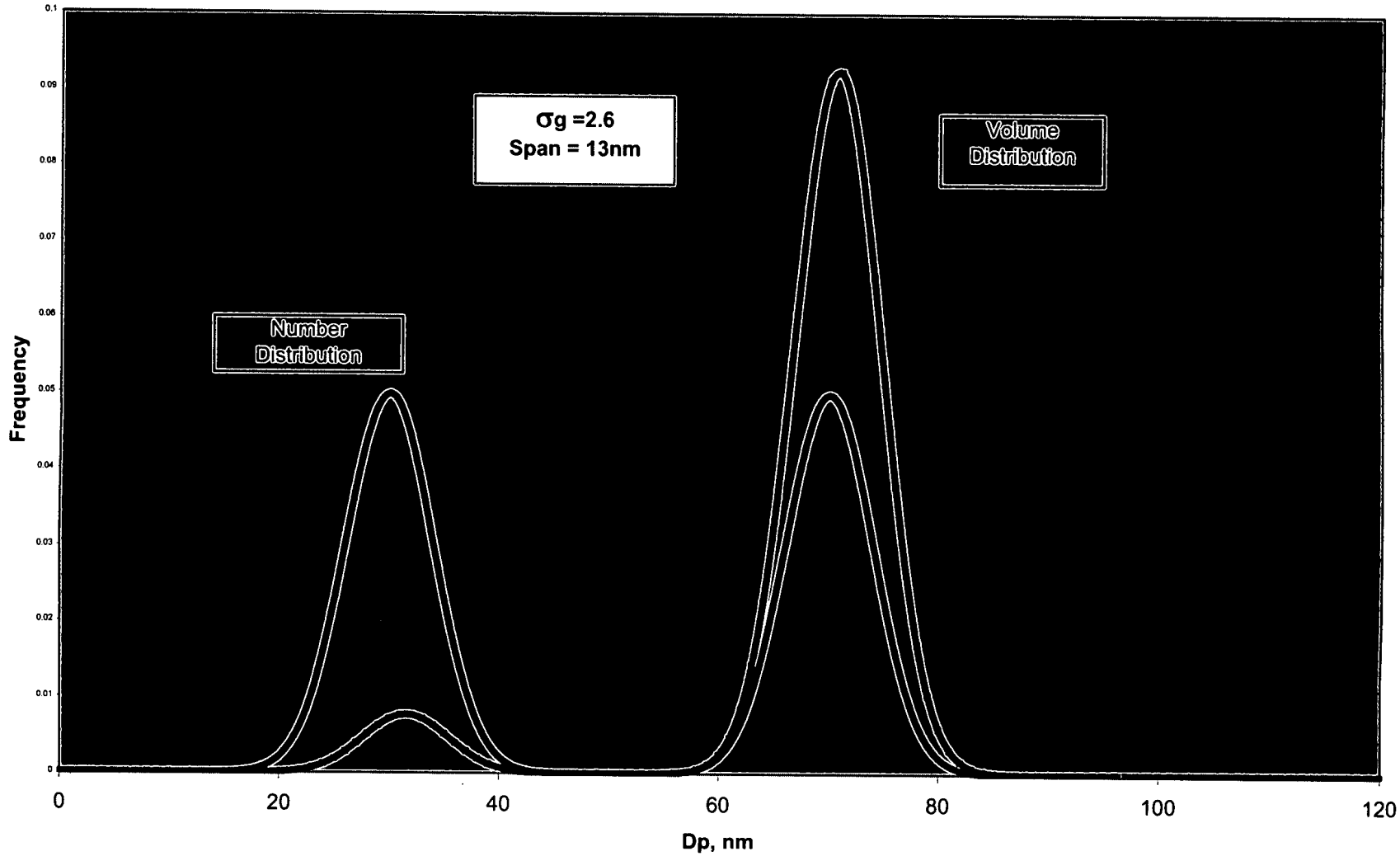

Figure 2b: **Example of a distribution of particles having small s_g but large span**